

## CLAIMS

1. A wellbore effluent potentiometric sensor comprising  
at least one reference electrode;  
5 at least one measuring electrode; and  
at least one connector between said reference and said  
measuring electrode, wherein said electrodes and connector  
form said potentiometric sensor exposed in operation to said  
wellbore effluent via an opening or sample channel and  
10 wherein said connector provides a continuous conductive path  
between said reference and said measuring electrode in the  
presence of hydrocarbon containing effluent.
2. A sensor according to claim 1 wherein the connector  
15 comprises a porous material.
3. A sensor according to claim 2 wherein the connector comprise  
an aqueous solution or gel.
- 20 4. A sensor according to claim 3 further comprising a discharge  
element adapted to release an aqueous solution or gel into  
the connector.
5. A sensor according to claim 4 wherein the discharge element  
25 is self-discharging in the wellbore.
6. A sensor according to claim 4 wherein the discharge element  
is controlled by an external control unit.
- 30 7. A downhole tool for measuring characteristic parameter of  
wellbore effluent comprising a potentiometric sensor having  
at least one reference electrode;  
at least one measuring electrode; and  
at least one connector between said reference and said  
35 measuring electrode, wherein said electrodes and connector  
form said potentiometric sensor exposed in operation to said  
wellbore effluent via an opening or sample channel and

wherein said connector provides a continuous conductive path between said reference and said measuring electrode in the presence of hydrocarbon containing effluent.

- 5 8. A downhole tool according to claim 8 wherein the connector  
comprises a porous material.
9. A downhole tool according to claim 7 wherein the connector  
comprises an aqueous solution or gel.
- 10 10. A downhole tool according to claim 9 further comprising a  
discharge element adapted to release an aqueous solution or  
gel into the connector.
- 15 11. A downhole tool according to claim 10 wherein the discharge  
element is self discharging in the wellbore.
12. A downhole tool according to claim 11 wherein the discharge  
element is controlled by an external control unit.